

CLAIMS

We claim:

1. A high voltage magnetic compression modulator comprising:
a low-voltage part comprising an energy source connected to a primary winding of a pulsed transformer; and
a high-voltage part comprising a secondary winding of said pulsed transformer connected to a capacitor, said capacitor being connected to a magnetic switch, said magnetic switch being connected to a load;
characterized in that a unidirectional low-impedance path for the charge of said capacitor is connected in parallel to said load.
2. The high voltage magnetic compression modulator according to claim 1, wherein the low-voltage part further comprises a storage capacitor and a fast high-current commutator, all connected in series in a loop with said primary winding of said pulsed transformer, and wherein said energy source comprises a capacitor charger.
3. The high voltage magnetic compression modulator according to claim 2, wherein said charger is connected to the storage capacitor and to the fast high-current commutator.
4. The high voltage magnetic compression modulator according to any of claims 1-3, wherein said pulsed transformer is wound on a ferromagnetic core.
5. The high voltage magnetic compression modulator according to any of claims 1-4, wherein said low impedance path includes a freewheeling diode.
6. A high voltage magnetic compression modulator comprising:
a low-voltage part comprising a charger with a first terminal connected to a first terminal of a storage capacitor and to a first terminal of a fast high-current commutator, and with a second terminal connected to a second terminal of said commutator and to a first terminal of a low-voltage winding of a pulsed transformer, the second terminal of said low-voltage winding being connected to the second terminal of said storage capacitor; and
a high-voltage part formed by said high-voltage transformer wound on a ferromagnetic core whose secondary winding is connected in parallel to a first capacitor and by a first of its terminals to a first terminal of a second capacitor, and by a second of its terminals to a first terminal of a magnetic switch, a second terminal of the magnetic switch being connected to a first terminal of a load, a second terminal of said secondary winding being connected to a second terminal of said load;

characterized in that a low-impedance path is provided for the charge of said second capacitor through a freewheeling diode connected in parallel to said load.

7. The high voltage magnetic compression modulator according to claim 6, wherein said charger first terminal is its positive terminal and said charger second terminal is its negative terminal.

8. The high voltage magnetic compression modulator according to claim 6, wherein said charger first terminal is its negative terminal and said charger second terminal is its positive terminal.

9. The high voltage magnetic compression modulator according to any of claims 6-8, wherein said fast high-current commutator comprises a thyristor.

10. The high voltage magnetic compression modulator according to any of claims 6-9, wherein said ferromagnetic core has a rectangular magnetization curve.

11. The high voltage magnetic compression modulator according to any of claims 6-10, further comprising N additional compression stages connected between said magnetic switch and said load and diode, each stage comprising an additional first magnetic switch, whose winding is connected in parallel to the first capacitor of this stage and by the first of its terminals to the first terminal of the second capacitor of this stage, whose second terminal is connected to the first terminal of the winding of second additional magnetic switch of this stage, the second terminal of second magnetic switch winding being connected to the first terminal of the first magnetic switch of the following stage, the second terminal of said winding of said first magnetic switch being connected to the second terminal of said load and to said diode, whose second terminals are connected to the second terminal of the second magnetic switch of the last compression stage.

12. The high voltage magnetic compression modulator according to claim 11, wherein at least one of said first magnetic switches is implemented as a high-voltage transformer wound on a ferromagnetic core having a rectangular magnetization curve.